

**REMARKS**

Claims 1, 2, 4-16, 18, 19, and 29 are currently pending. Claims 20-28 are withdrawn.

**Amendment to the Claims**

Claim 1 has been amended to specify that the glass or glass-ceramic sealant composition upon heating to a temperature above its softening point devitrifies and crystallizes and is adapted to seal solid oxide fuel cell components. Claim 2 has been amended to incorporate the limitations of claims 3 and 17. Accordingly claims 3 and 17 have been cancelled. New claim 29 has been added. Support for this new claim is found at least at paragraph [17]. No new matter has been added.

**Restriction Requirement**

The Office Action divided claims 1-28 into three groups: Group I, claims 1-19, drawn to a glass composition; Group II, claims 20-22, drawn to a fuel cell; and Group III, claims 23-28, drawn to a method of making a fuel cell. Applicants confirm the provisional election, with traverse, to prosecute Group I, claims 1-19. Applicants traverse because search and examination of the three groups of claims together should not be an undue burden, given the overlap of the subject matter of the claims.

**Allowable Subject Matter**

Applicants thank the Examiner for indicating that claims 18 and 19 are allowable.

**Claim Rejections Under 35 U.S.C. § 102**

Claims 2 and 12 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,124,224 to Sridharan et al. (“Sridharan”). The rejection is respectfully traversed as applied to the amended claims.

**Sridharan Does Not Disclose All the Elements of Applicants' Amended Claims**

Sridharan discloses high temperature sealing glass compositions for electronic devices such as oxygen sensor units. The compositions contain very little, and preferably, no alkali metal oxides. The glass component comprises, in weight percent, 17% to 56% BaO+SrO, 18% to 60% SiO<sub>2</sub>, 6% to 36% B<sub>2</sub>O<sub>3</sub>, 2% to 32% Al<sub>2</sub>O<sub>3</sub>, 0% to 25% of a combined level of CaO and MgO, 0% to 20% of a combined level of Y<sub>2</sub>O<sub>3</sub> and La<sub>2</sub>O<sub>3</sub>, 0% to 7% ZrO<sub>2</sub>, 0% to 3% alkali oxides, 0% to 5% Co<sub>3</sub>O<sub>4</sub>, 0% to 5% NiO, and 0% to 3% MoO<sub>3</sub>.

Sridharan does not explicitly or inherently disclose or suggest a composite sealant composition comprising a mixture of alkali-free inorganic oxides including, on a mole basis, 20 to 50 % BaO, 1 to 10% Y<sub>2</sub>O<sub>3</sub>, 5 to 20% B<sub>2</sub>O<sub>3</sub>, 10 to 30% SiO<sub>2</sub>, 3 to 35% MgO, 2 to 20% CaO, 1 to 10% ZnO, and 0 to 5% ZrO<sub>2</sub>, where the glass component upon heating to a temperature above its softening point *devitrifies and crystallizes* to transform the glass component into a glass-ceramic matrix in which the filler component is dispersed, as required by Applicants' amended claim 2. Thus, Applicants' amended claims 2 and 12 are novel.

**Claim Rejections Under 35 U.S.C. § 103**

Claims 1-13 and 17 are rejected under 35 U.S.C. § 103(a) as being obvious over Sridharan in view of U.S. Patent No. 6,362,119 to Chiba ("Chiba"). Claim 14 is rejected under 35 U.S.C. § 103(a) as being obvious over Sridharan in view of Chiba and U.S. Patent Application Publication No. 2003/0216240 to Kodera et al. ("Kodera"). Claim 15 is rejected under 35 U.S.C. § 103(a) as being obvious over Sridharan in view of U.S. Patent Application Publication No. 2003/0162883 to Fabian et al. ("Fabian"). Claim 16 is rejected under 35 U.S.C.

§ 103(a) as obvious over Sridharan in view of Fabian and U.S. Patent No. 4,365,021 to Pirooz (“Pirooz”). The rejections are respectfully traversed as applied to the amended claims.

Applicants’ Claimed Compositions are Non-Obvious over Sridharan in Combination with Chiba

Applicants submit that a *prima facie* case of obviousness has not been established because a person of ordinary skill in the art would not combine Sridharan with Chiba, and even if combined, the combination fails to disclose or suggest all the elements and features of Applicants’ claims.

Nothing in Sridharan, alone or in combination with Chiba, provides an apparent reason for a person of ordinary skill in the art to modify Sridharan with Chiba in the precise fashion claimed to obtain the specific limitations of Applicants’ claims. First, Sridharan provides high temperature sealing glass compositions for electronic devices, while Chiba is directed toward glass for automobile windows and glazes for dishes. Thus, a skilled artisan would have no apparent reason to look to the completely different glass compositions in Chiba to modify the sealing glass compositions of Sridharan. Second, a person of ordinary skill in the art starting from Sridharan would not look to Chiba, which teaches that the glass *preferably is less likely to undergo crystallization* (e.g., for use in automobile windows), to modify Sridharan to derive Applicants’ claimed compositions, which expressly are intended to *devitrify and crystallize*.

Furthermore, the Supreme Court declared that a combination of elements may be obvious to try only “when there is a **design need or market pressure** to solve a problem and there are a **finite number of identified, predictable solutions** [and] a person of ordinary skill in the art has good reason to pursue the known options within his or her technical grasp.” Teleflex, Inc. v.

KSR Int'l Co., 127 S. Ct. 1727, 1742 (2007) (emphasis added). No specific design need or market pressure has been given for why a person of ordinary skill in the art would modify Sridharan to include the ZnO of Chiba, as claimed by Applicants. Contrary to the Examiner's assertion, Chiba does not teach that ZnO controls devitrification behavior in glass, but rather merely states that if the amount of ZnO exceeds 20%, the glass tends to devitrify during melting. Such a disclosure does not evidence any design need or market pressure to modify Sridharan in the precise fashion claimed by Applicants.

Moreover, both Sridharan and Chiba *allow for the inclusion of alkali oxides* in the compositions disclosed therein. When applying 35 U.S.C. § 103, "the following tenets of patent law must be adhered to: (A) The claimed invention must be considered as a whole; (B) The references *must be considered as whole* and must suggest the desirability and thus the obviousness of making the combination." Hodosh v. Block Drug Co., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986) (emphasis added). A skilled artisan reading Sridharan and Chiba would find no apparent reason to remove alkali oxides completely. Thus, the prior art provides no apparent reason to derive Applicants' claimed compositions requiring *alkali-free oxides*, so that the sealant compositions are suitable for use in solid oxide fuel cells.

Applicants' Claimed Compositions are Non-Obvious over Sridharan in Combination with Chiba and Kodera, with Fabian, or with Fabian and Pirooz

The number of unrelated materials that may be used as fillers and binders and the number of unrelated forms of applying a sealant is vast. "A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning." KSR Int'l Co. v. Teleflex Inc., 127 U.S. 1727, 1742 (2007). It is apparent that the

selection of the materials posited by the Examiner to match the materials claimed by Applicants is only obtained using ex post reasoning. The Examiner's reasoning that a skilled artisan would choose barium titanate as a filler component, thermoplastic polymers in a binder system, and a sealant composition in the form of a tape would only be obtainable by improper hindsight in view of Applicants' claims 14, 15, and 16, respectively. Sridharan and Chiba only disclose specific fillers which do not include barium titanate and do not disclose binders or sealant composition forms at all. Thus, the modification of the Sridharan or the combination of Sridharan and Chiba as posited by the Examiner could only be derived from hindsight.

Therefore, Applicants claims are novel and nonobvious and the rejections should be withdrawn.

## **CONCLUSION**

Applicants believe that the present application, as amended, is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The foregoing is submitted as a full and complete response to the Office Action mailed June 11, 2008.

It is not believed that extensions of time or fees for addition of claims are required. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fee required therefore (including fees for net addition of claims), or credit of any overpayment, is hereby authorized to be charged to Deposit Account No. 19-5029 (Reference No. 19441-0072). In addition, if there are any issues that can be resolved by a telephone conference or an Examiner's

amendment, the Examiner is invited and encouraged to call the undersigned attorney at (404) 853-8036.

Respectfully submitted,



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